

Synthesis and Characterization of Activated Carbon Derived from Agricultural Waste (Cocoa Pod Husks) as Potential Electrode for Symmetric Supercapacitor

Oladepo Fasakin^{a,b*}, Kabir O. Oyedotun^b, Abdulmajid A. Mirghni^b, Ndeye F. Sylla^b, Badr A. Mahmoud^b, Ncholu Manyala^{b*}

^aDepartment of Physics and Engineering Physics, Obafemi Awolowo University,
Ile-Ife 220005, Nigeria

^bDepartment of Physics, University of Pretoria, Pretoria 0002, South Africa

*Corresponding author's emails: fasakinoladepo@oauife.edu.ng, Tel.: + (234)8030786404
ncholu.manyala@up.ac.za, Tel.: + (27)12 420 3549

SUPPLEMENTARY INFORMATION

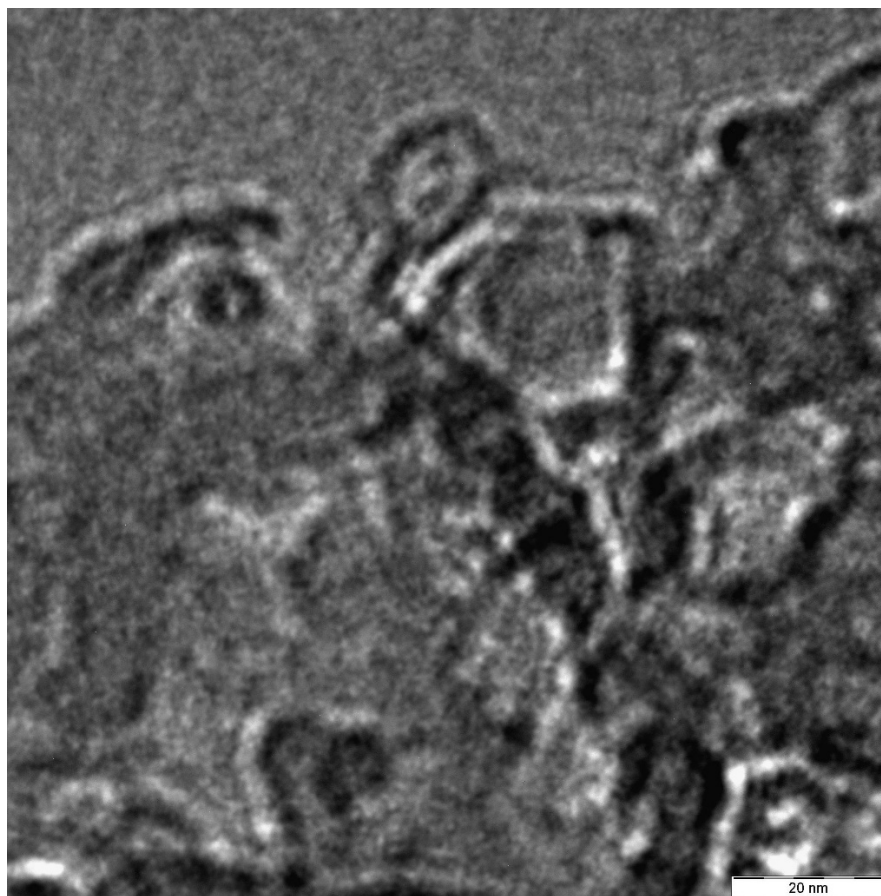


Figure S1: high magnification of TEM of activated carbon (ACC 600 °C)

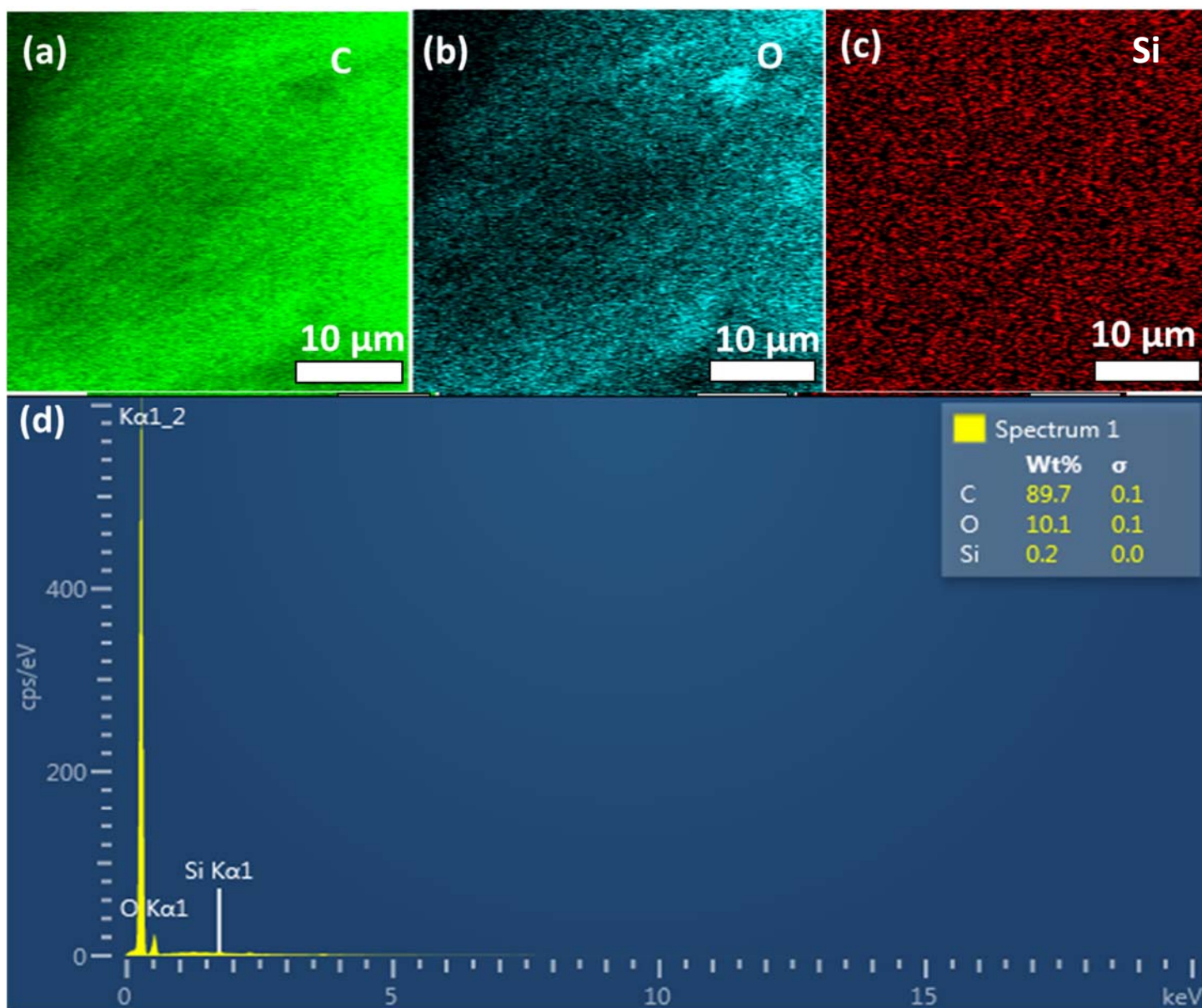
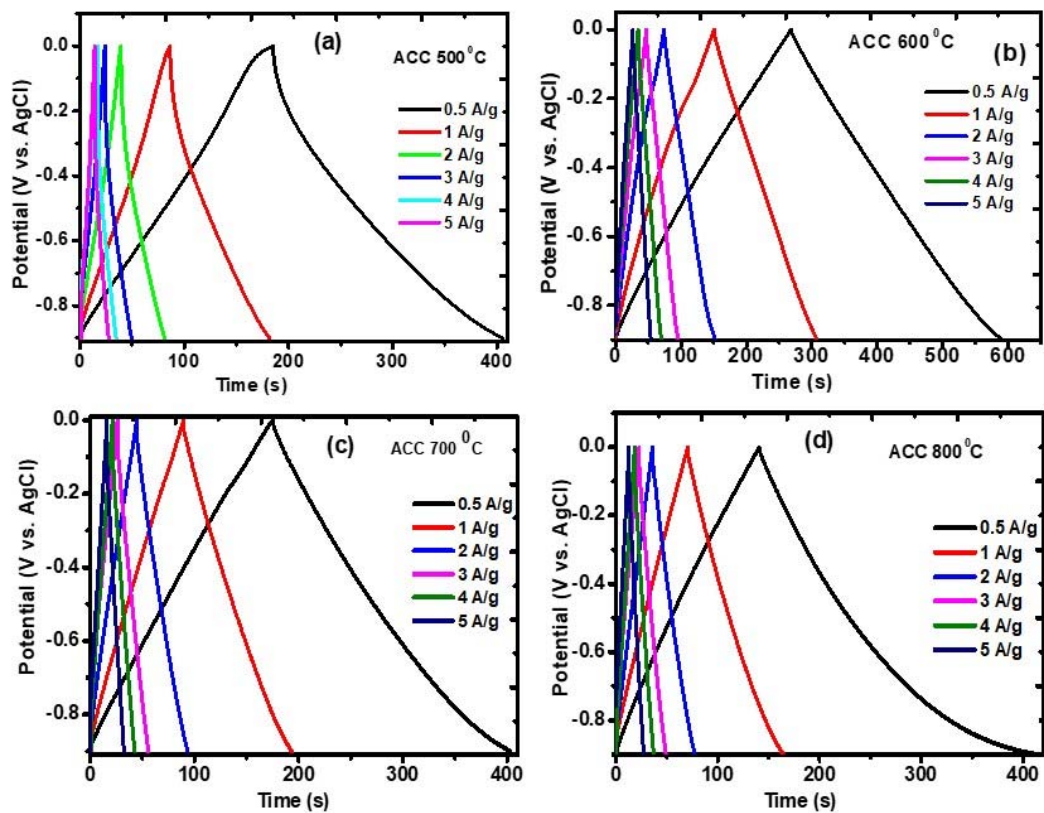


Figure S2. (a-c) presents the elemental mapping of Activated Carbon sample (ACC 600 °C) displaying the distribution of carbon, oxygen, and silicon, respectively and (d) the percentage composition of the elements within the activated sample.



Figure

S3. (a-d) plots of GCD curves at various electrodes (ACC 500 °C-ACC 800 °C) for negative potential windows, evaluated in 2.5M KNO₃ electrolyte with three-electrode measurement.

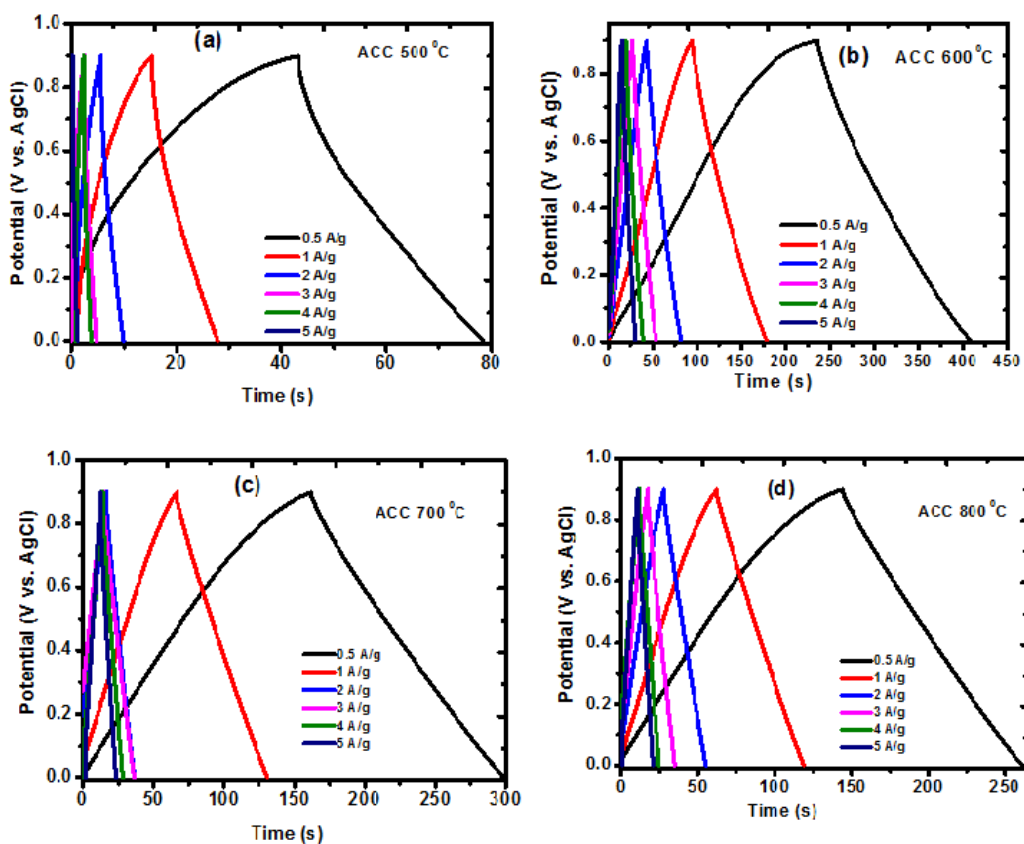


Figure S4. (a-d) plots of GCD curves at various electrodes (ACC 500 °C-ACC 800 °C) for positive potential windows, evaluated in 2.5M KNO₃ electrolyte with three-electrode measurement.

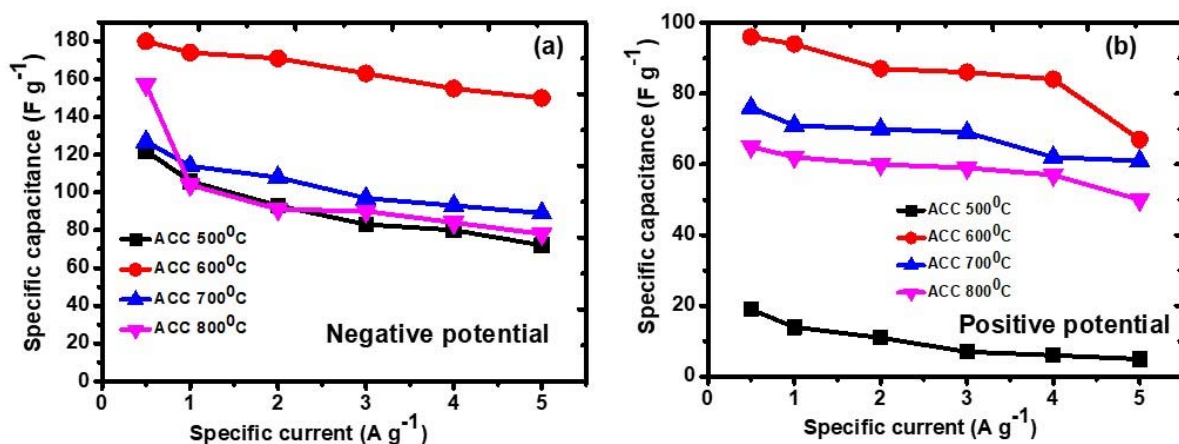


Figure S5. (a,b) plots of specific capacitance against specific current at various electrodes (ACC 500 °C-ACC 800 °C) for negative and positive electrode, evaluated in 2.5M KNO₃ electrolyte with three-electrode measurement.

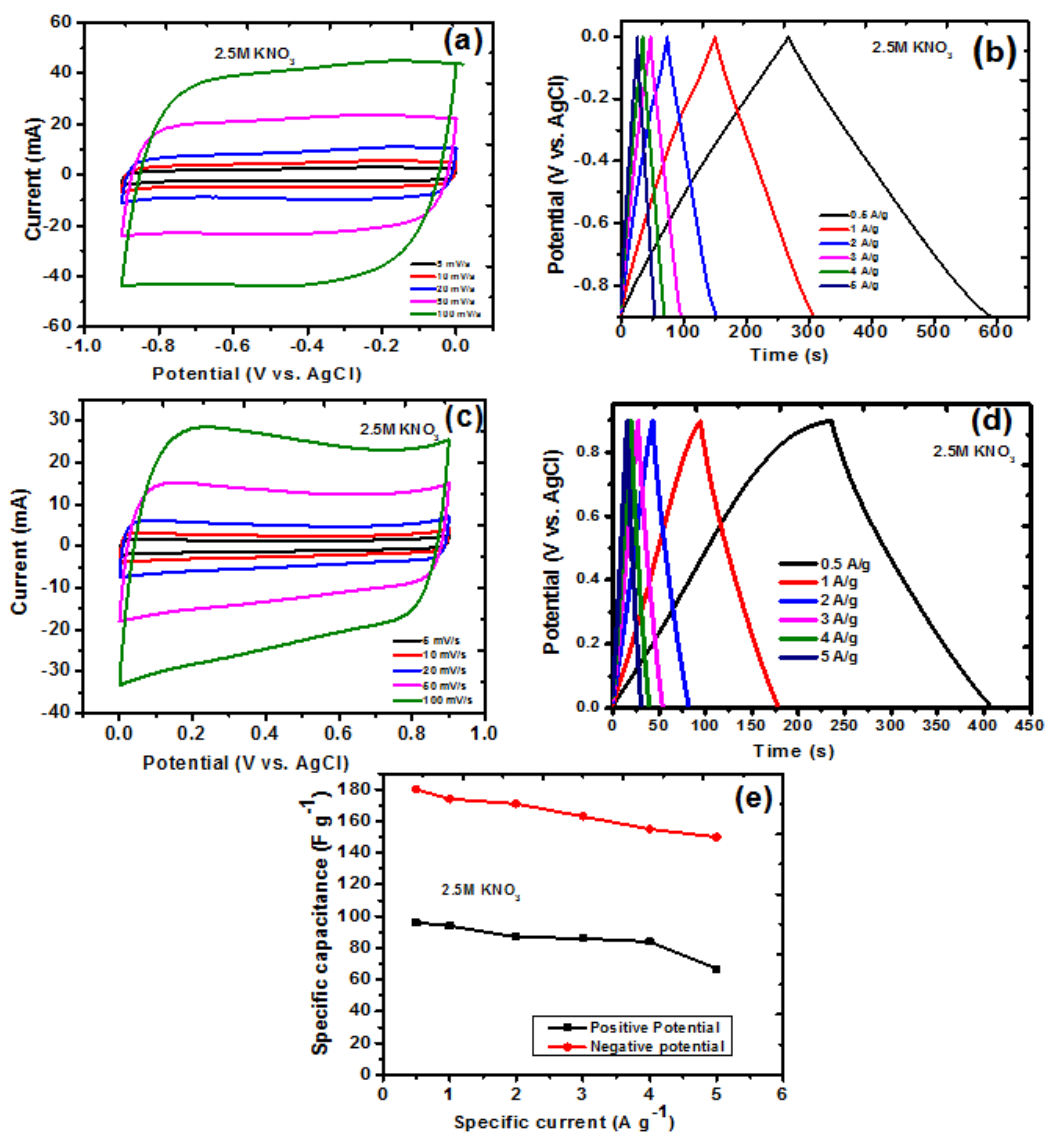


Figure S6. (a,c) CV plots of ACC 600 °C sample at negative and positive potential windows, (b,d) plots of GCD of ACC 600°C sample at negative and positive potential windows and (e) corresponding plot of specific capacitance against specific current of ACC 600 °C sample, evaluated in 2.5M KNO₃ electrolyte with three-electrode measurements.